

WHAT IS CLAIMED IS:

1. A method of electrically and mechanically connecting (a) a shielded heating cable comprising a metal sheath and heating wire elements with (b) a power supply cable comprising a ground conductor and power supply conductors, comprising:

connecting, in a zone of interconnection between the shielded heating cable and the power supply cable, a free end of the metal sheath with a free end of the ground conductor;

connecting, in the interconnection zone, free ends of the heating wire elements with free ends of the power supply conductors, respectively; and

making, in the interconnection zone, a length of the interconnected metal sheath and ground conductor shorter than lengths of the interconnected heating wire elements and power supply conductors whereby, in operation, longitudinal tension in the interconnection zone is totally supported by the interconnected metal sheath and ground conductor.

2. The method of claim 1, wherein connecting the free end of the metal sheath with the free end of the ground conductor comprises:

- ultrasonically welding the free end of the metal sheath with the free end of the ground conductor.

3. The method of claim 1, wherein connecting the free ends of the heating wire elements with the free ends of the power supply conductors comprises:

- ultrasonically welding the free ends of the heating wire elements with the free ends of the power supply conductors.

4. The method of claim 1, wherein connecting the free end of the metal sheath with the free end of the ground conductor comprises:

- stripping an insulating jacket of the shielded heating cable to expose the free end of the metal sheath;

- withdrawing the heating wire elements from the exposed free end of the metal sheath;
- stripping insulation from the free end of the ground conductor to expose a free end of an electrically conductive wire of the ground conductor; and
- 5 - connecting the stripped free end of the metal sheath with the exposed free end of the electrically conductive wire of the ground conductor.

5. The method of claim 4, wherein connecting the stripped free end of the metal sheath with the exposed free end of the electrically conductive wire of the
10 ground conductor comprises:

- ultrasonically welding the stripped free end of the metal sheath with the exposed free end of the electrically conductive wire of the ground conductor.

15 6. The method of claim 1, wherein connecting the free ends of the heating wire elements with the free ends of the power supply conductors comprises:

- stripping insulation from the free ends of the heating wire elements to expose free ends of resistance wires of the heating wire elements;
- 20 - stripping insulation from the free ends of the power supply conductors to expose free ends of electrically conductive wires of the power supply conductors; and
- connecting the exposed free ends of the resistance wires of the heating wire elements to the exposed free ends of the electrically conductive wires
25 of the power supply conductors.

7. The method of claim 6, wherein connecting the exposed free ends of the resistance wires of the heating wire elements to the exposed free ends of the electrically conductive wires of the power supply conductors comprises:

- 30 - ultrasonically welding the exposed free ends of the resistance wires of the heating wire elements to the exposed free ends of the electrically conductive wires of the power supply conductors.

8. A method of electrically and mechanically connecting (a) a first shielded cable comprising a metal sheath and electrical conductors with (b) a second cable comprising a ground conductor and electrical conductors, comprising:

- connecting, in a zone of interconnection between the first and second cables, a free end of the metal sheath with a free end of the ground conductor;
- connecting, in the interconnection zone, free ends of the electrical conductors of the first cable with free ends of the electrical conductors of the second cable, respectively; and
- making, in the interconnection zone, a length of the interconnected metal sheath and ground conductor shorter than lengths of the interconnected electrical conductors of the first cable and electrical conductors of the second cable whereby, in operation, longitudinal tension in the interconnection zone is totally supported by the interconnected metal sheath and ground conductor.

9. An electrical and mechanical connection between (a) a shielded heating cable comprising a metal sheath and heating wire elements and (b) a power supply cable comprising a ground conductor and power supply conductors, comprising:

- a zone of interconnection between the shielded heating cable and the power supply cable;
- in the interconnection zone, a first connection between a free end of the metal sheath and a free end of the ground conductor; and
- in the interconnection zone, second connections between free ends of the heating wire elements and free ends of the power supply conductors, respectively;
- wherein, in the interconnection zone, the interconnected metal sheath and ground conductor have a first length shorter than second lengths of the interconnected heating wire elements and power supply conductors whereby, in operation, longitudinal tension in the interconnection zone is totally supported by the interconnected metal sheath and ground conductor.

10. The connection of claim 9, wherein the first and second connections comprises ultrasonically welded connections.

5 11. An electrical and mechanical connection between (a) a first shielded cable comprising a metal sheath and electrical conductors and (b) a second cable comprising a ground conductor and electrical conductors, comprising:

 a zone of interconnection between the first and second cables;

10 in the interconnection zone, a first connection between a free end of the metal sheath and a free end of the ground conductor; and

 in the interconnection zone, second connections between free ends of the electrical conductors of the first cable and free ends of the electrical conductors of the second cable, respectively;

15 wherein, in the interconnection zone, the interconnected metal sheath and ground conductor have a first length shorter than second lengths of the interconnected electrical conductors of the first cable and electrical conductors of the second cable whereby, in operation, longitudinal tension in the interconnection zone is totally supported by the interconnected metal sheath
20 and ground conductor.